How TSP^{SM} Implementation Has Evolved at AV-8B

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Presentation Objectives

- Background of AV-8B JSSA
- Evolution of Launch Processes
- Evolution of Periodic Team Meeting Processes
- Performing Coordinator/Manager Roles
- Evolution of Postmortem Processes

[1]Personal Software Process, PSP, Team Software Process, and TSP are service marks of Carnegie Mellon University

AV-8B JSSA Background

- Overview
  - Provide AV-8B life-cycle systems development, operation and maintenance support to the United States Marine Corps, Italian Navy and Spanish Navy
  - Located at China Lake, California
  - Weapon System Support Activity (WSSA) established in 1985
  - Joint System Support Activity (JSSA) established in 1992 upon partnership with the Spanish and Italian Governments
  - 70-80 personnel; 10-15 s/w engineers
- Goal
  - Release Operational Flight Program (OFP) and Mission Planning Maintenance Releases when needed by the fleet

TSP Milestones at AV-8B

Start PSP/TSP Training (10/2000)

1st TSP Launch (12/2000)

JSSA receives CMM Level 2 (Spring 2001)

TSP becomes org standard s/w process (6/2002)

JSSA receives CMM Level 4 (Fall 2002)

1st Non-SW Launch (4/2006)

Start TPI Pilot (9/2006)

2001 2002 2003 2004 2005 2006 2007 2008

Launch Process Evolution

- Launch Preparation
  - **Past**: **little to no preparation**
  - **Problems**:
    - frustration from estimating without enough time
    - less confidence in ability to execute plan
  - **Present**: **components estimated by individuals & team lead beforehand**
    - more insightful discussions on extent of work to be performed
    - deeper understanding of the team's undertaking
    - fewer surprises during the launch

HAE ROM.doc - Microsoft Word

File Edit View Insert Format Tools Table Window Help Type a question for help

HAE ROM
(1,149 SLOCS TOTAL)
Engr 1 assumed to work unless otherwise stated

PR 2847 – Implement DTED Capability in the AV-8B (400 SLOCS) - Component "PR2847 – Add HAE Table" – Rate 5 SLOC/Hr – Classic Lifecycle

Engr 2

The design will be integrated with HAE to create a Façade to handle all Altitude requests and interface with calls to getting DTED data. The Façade estimates were based on looking at existing Facades for QV_VSTOLREST and EVPointFacade. The Estimate for .cpp is 300 SLOCS (GetMSL, GetHAE, ComputeMSL, ComputeHAE and Interpolation routines).
Estimate for .h is 100 SLOCS for definitions.
Estimate for DTED Table will be provided and is assumed Plug and Play.

STR 6800 – JDAM Transition to HAE for Target Altitude Reference (10 SLOCS) - Component "STR6800_STR7571 – Enter and Send HAE to JDAM" – Total 185 SLOC Rate 5 SLOC/Hr – Lite Lifecycle – Med (Engr 4 to work)

Engr 3

The design on this is an Interface change to set a bit indicating that the elevation value is either MSL or HAE.

STR 7571 – Allow for HAE Elevation Entry for JDAM (175 SLOCS) - Combined with Component "STR6800_STR7571 – Enter and Send HAE to JDAM" (Engr 4 to work)

Engr 3

This design requires addition of HAE button (25 SLOCS), changes on the TED

Page 1 Sec 1 1/2 At 6" Ln 27 Col 7 REC TRK EXT OVR English (U.S

Launch Process Evolution

- Estimating S/W Maintenance Efforts
  - **Past**: **used LOC as size measure**
  - **Problems**:
    - actual A&M LOC counts had no correlation to actual effort
  - **Present**: **using problem type categories as size measure**
    - overall time estimates are within 7% of actuals

Launch Process Evolution

Object Category Size table for C++ (in LOCs/method)

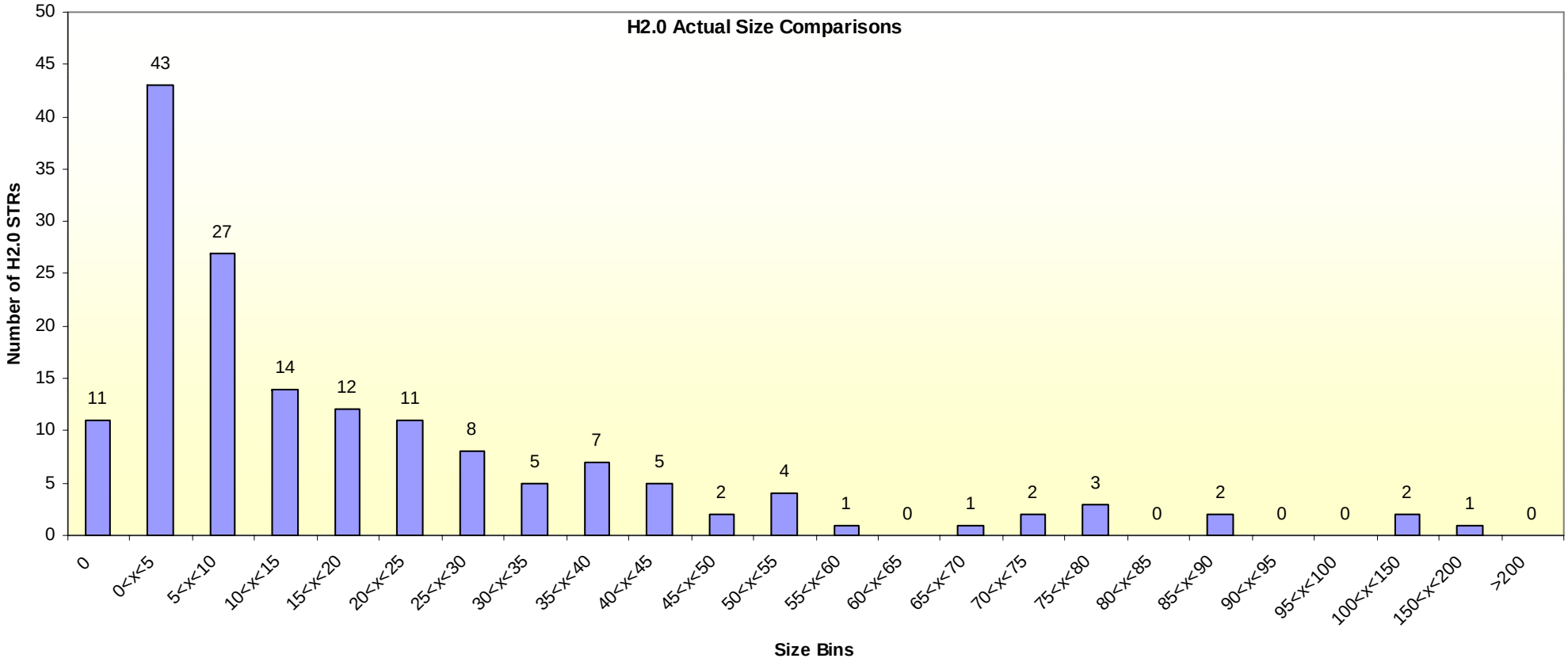
Type	VS	S	M	L	VL
Calculation	2.34	5.13	11.25	24.66	54.04
Data	2.60	4.79	8.84	16.31	30.09
I/O	9.01	12.06	16.15	21.62	28.93
Logic	7.55	10.98	15.98	23.25	33.83
Set-up	3.88	5.04	6.56	8.53	11.09
Text	3.75	8.00	17.07	36.41	77.66

Problem Category Size table for AV-8B OFPs (in Hours/STR)

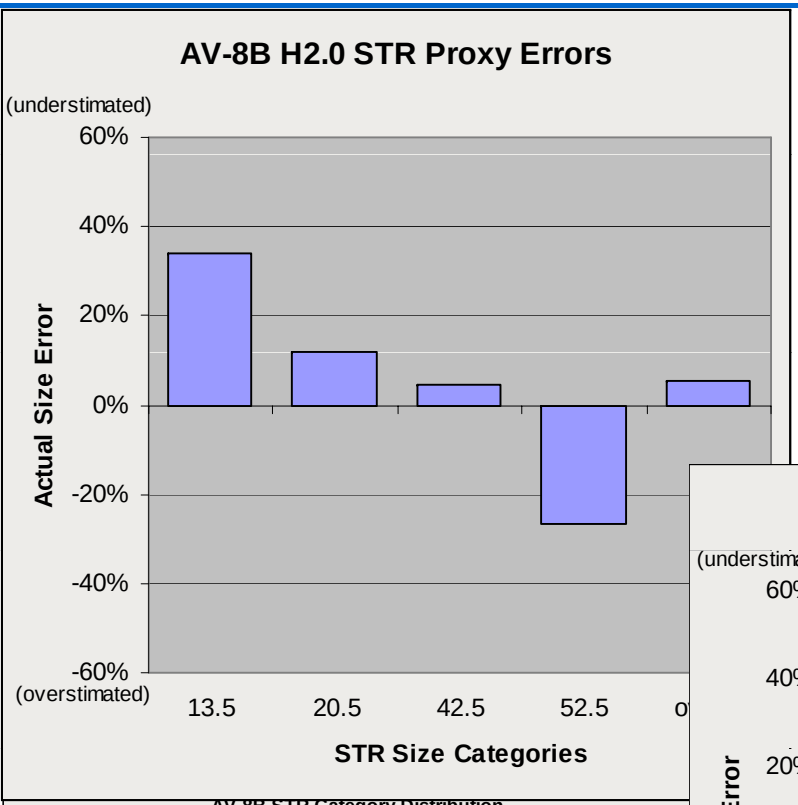
Type	Small	Med	Large	Extra Large
STR	6	17	35	60

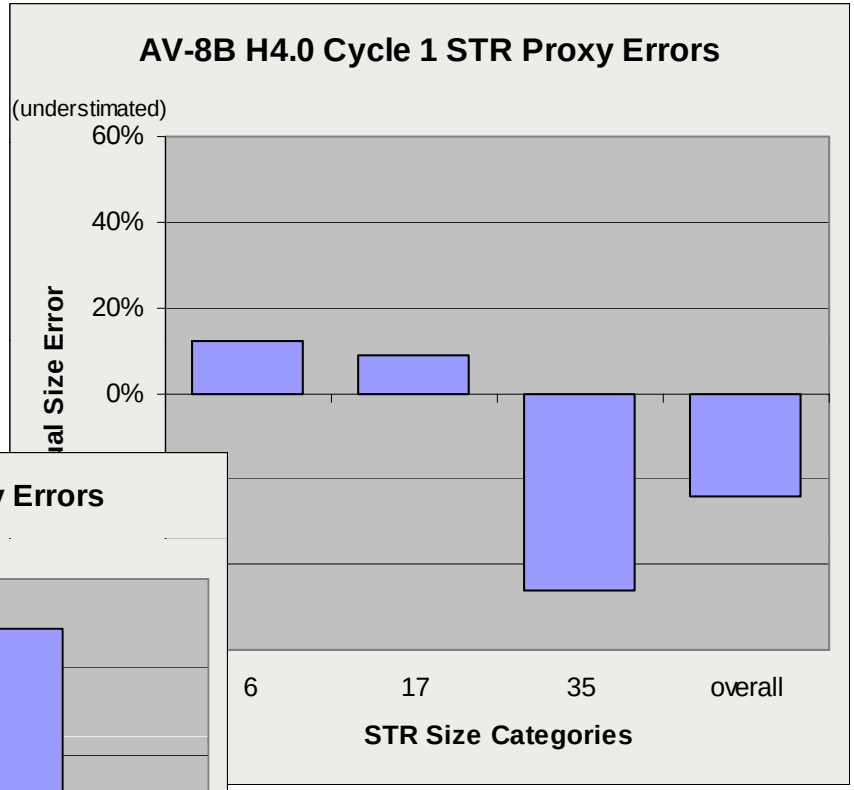
Launch Process Evolution

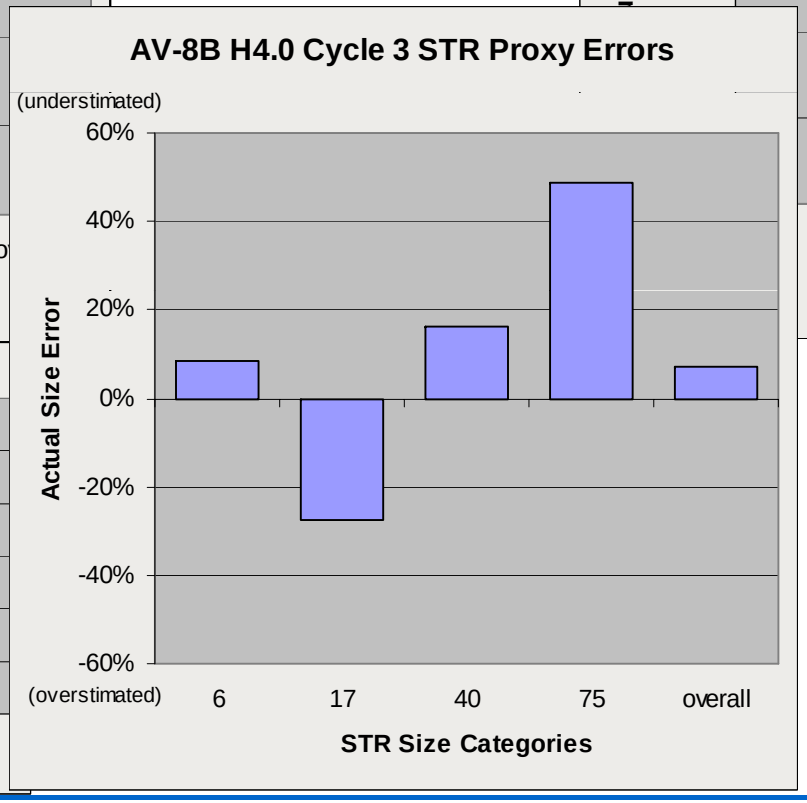
Size Bin Counts of Actual Efforts for STRs in H2.0

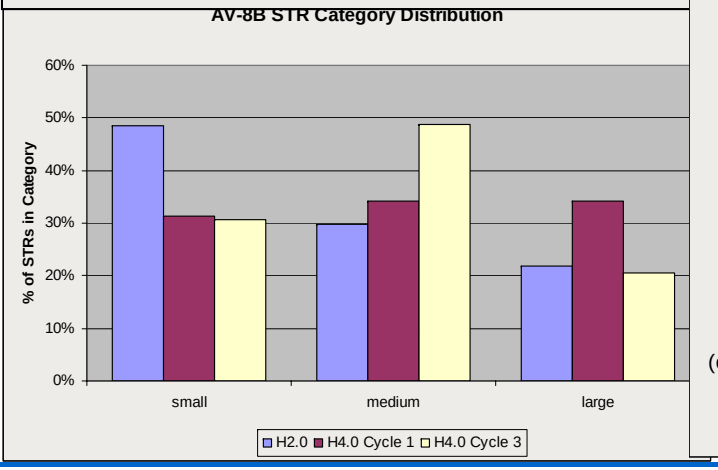


Launch Process Evolution









Launch Process Evolution

- S/W Maintenance Life-cycle Process
  - **Past**: **used "classic" TSP life-cycle**
  - **Problems**:
    - no problem identification phase
    - did not fit iterative nature of finding the root cause
  - **Present**: **using "Lite" life-cycle**
    - simple life-cycle good for small STRs
    - natural for iterative nature of finding the root cause

Launch Process Evolution

HLD	IDENT	high-level problem analysis
HLDINSP		
DLD	INWRK	design, code, and unit test activities
DLDR		
DLDINSP		
CODE		
CR		
CODEINSP		
COMPILE		
UT		
	INSP	inspection of design and code products
IT	IT	lab test/verification performed by developer
ST	RA	determination of need for re-work
	ST	re-work triggered by failure during final testing

Meeting Process Evolution

- Preparation of Data Before the Meeting
  - **Past**: **little to no collection or review**
  - **Problems**:
    - wasted time analyzing incomplete/corrupt data
    - longer time relaying status (“Ummm…”)
    - longer time looking for data (“Where is that file?”)
  - **Present**: **reports generated and compiled**
    - coordinators generate reports in common folder on server
    - status documented in common set of PowerPoint slides

PROJECT X Software Status Meeting 01/06/2003

- Meeting Roles
  - Recorder: EngrA
  - Chair: EngrB

Agenda

- Team Leader’s Time (5 Min)
- Team & Individual Status (30 Min)
- Roles (15 Min)
- Goals, Risks, & Action Items (15 Min)
- Meeting Wrap-up (5 Min)

Team Leader's Time (5 Min)

- UPC Day at Eglin AFB 01/08-09
  - latest JMPS schedule to be announced then
  - XXX will be at the meeting
- When should we plan for the next Build 3 be made?

Team & Individual Status (30 mins)

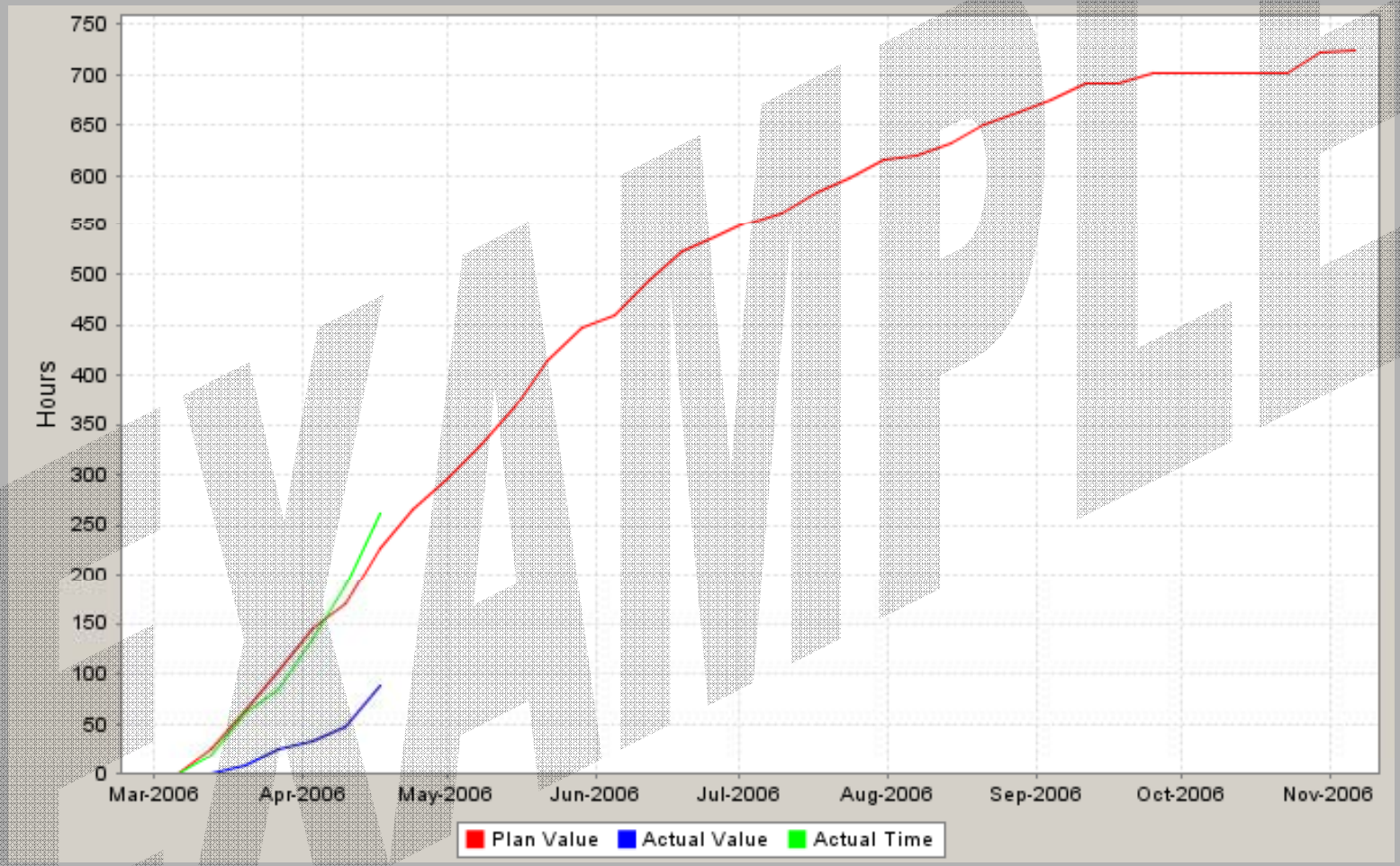
- Team Status
  - Earned Value
  - Time on Task
  - Weekly View
- Individual Status' (each team member)
  - How things went last week
  - Problems they are encountering
  - Plans for next week

Planning Coordinator

- **All workbooks need to be submitted the last working day of the week in order for rollups, slides and analysis to be done before the weekly meetings. Any workbooks that are not received by 8 AM each Monday, the assumption will be that last weeks data is the most current and include it for the rollup and analysis. Keep in mind that if this occurs, Earned Value and schedule will be affected.**

  - Please send all workbooks and slides at the end of the week not only to me but also to XXX (XXX@abc.com) and YYY (YYY@abc.com)

Current Status



The team is currently 3 weeks behind.

Current Status

	Direct Hours			Earned Value		
	Plan	**Actual**	**Actual/Plan**	**Plan**	**Actual**	**Actual/Plan**
This Week	42:00	72:04	1.72	8%	5.7%	0.71
To Date	242:00	260:38	1.08	31.5%	12.3%	0.39
Average per Week To Date	34:35	37:15	1.08	4.5%	1.76%	0.39
Completed tasks to date	88:57	124:24	1.4			

- Our Earned Value to date is lower then we planned.
- The team is spending more hours then planned on tasks that are completed.
- The team has 136 hrs (3.2 team weeks) invested in uncompleted tasks.

Quality Coordinator Report

- Defect ratios:
  - DLD Review/Unit test Planned 1.6, Actual 0.26
  - Code Review/Compile Planned 1.9, Actual 0.89

Process Coordinator Report

- Introduced PIP Tracker
  - J:\Project Notebook\PIPs\PROJECT X PIP Tracker.xls
- New PIPs (#)
- Newly Assigned PIPs (#)
- Newly Closed PIPs (#)
- PIP Board will/will not meet today
  - PIPs that will be covered
- Still have EV PIPs open.

Support Coordinator Report

	Rational Rose 2000e (Prof C++) w/ 3 COM patches	Rational Test Foundation	Rational Team Test	Rose Link	Rational Purify 2001.03.00	ACAT	Numega DevPartner for VC++ 6.50	MS Visual Source Safe 6.0	Telos Tools Measure	MS XML SDK	DOORS 4.1.3.0	Orbix COMet or Rogue Wave Nuveau	Source Forge HTML (sourceforge.net)	PVCS Client 2.5.1	Code Gen Database (6/18/02 or later)	WARP	Borland C++ Builder 5.0 +3.0 for WARP	Windows 2000	Service Pack 2	Microsoft Office 2000 Professional	SR 1	Service Pack 2	Microsoft Visual Studio 6.0 (Professional)	Service Pack 5	JMPS (Beta 5)	JMPS (Beta 5.2)	COE 4.2.05
Engr 1								x			x			x	x		x	x	x	x	x	x	x	x		x	n/a
Engr 2																		x	x	x	x	x	x	x	x		n/a
Engr 3	x							x			x			x	x		x	x	x	x	x	x	x	x	x		n/a
Engr 4	x													x	x	x	x	x	x	x	x	x	x	x	x	x	n/a
Engr 5	x										x			x	?	x	x	x	x	x	x	x	x	x	x	x	n/a
Engr 6								x			x			x	x	x	x	x	x	x	x	x	x		x	n/a
DII COE notebook	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	x	x	x	x	x	n/a	n/a	x		x
Engr 7											x			x	x		x	x	x	x	x	x	x	x	x		n/a
lab computer (NT 4.0)								x			x			x		x								n/a	n/a	n/a	
lab computer (2k) for 3.0																		x	x	x	x	x	x	x	n/a	x	
lab computer (2k) for 3.1																		x	x	x	x	x	x	x	n/a	x	

As of 1211/02

Test Coordinator Report 06 Jan 2003

different change all passed

		build 2-3			build 3.0			Build 3.1 16-Dec-02			Build 3.2 23-Dec-02		
	script file	# tests	# errors	% passed	# tests	# errors	% passed	# tests	# errors	% passed	# tests	# errors	% passed
DLB	mission_main.txt	427	2	100	427	2	100	427	2	100	427	2	100
	aircraft_init.txt	44	1	98	44	2	95	44	2	95	44	2	95
	aircraft_main.txt	1039	1	100	1039	8	99	1039	8	99	1039	8	99
	aircraft_file.txt	261	1	100	261	5	98	261	5	98	261	5	98
	LoadRalt_init.txt	20	0	100	20	0	100	20	0	100	20	0	100
	LoadRalt_main.txt	164	0	100	164	0	100	164	0	100	164	0	100
	LoadRalt_file.txt	67	0	100	67	0	100	67	0	100	67	0	100
RNL	VSTOL_init.txt	8	0	100	8	0	100	8	0	100	8	0	100
	VSTOL_main.txt	56	0	100	56	0	100	56	0	100	56	0	100
	VSTOL_file.txt	34	0	100	34	0	100	34	0	100	34	0	100
	FlightCardsARC182_init.txt	17	0	100	17	0	100	17	0	100	17	0	100
	FlightCardsARC182_main.tx	11108	0	100	11108	0	100	11108	0	100	11108	0	100
	FlightCardsARC182_file.txt	1343	3	100	1343	3	100	1343	3	100	1343	3	100
DLC	LoadWpnProg_init.txt	60	1	98	60	5	92	60	5	92	60	5	92
	LoadWpnProg_main.txt	948	27	97	948	31	97	948	31	97	948	31	97
	LoadWpnProg_file.txt	3950	5	100	3950	8	100	3950	8	100	3950	8	100
	LoadC1_init.txt	80	0	100	80	0	100	80	0	100	80	0	100
	LoadC1_main.txt	1122	146	87	1122	146	87	1122	146	87	1122	146	87
	LoadC1_file.txt	425	0	100	425	0	100	425	0	100	425	0	100
	LoadEALE39_init.txt	82	3	96	82	3	96	82	3	96	82	3	96
	LoadEALE39_main.txt	114	14	88	114	14	88	114	14	88	114	14	88
	LoadEALE39_file.txt	360	8	98	360	8	98	360	8	98	360	8	98
	LoadExt_init.txt	42	15	64	42	15	64	42	15	64	42	15	64
	LoadExt_main.txt	caused runtime error			caused runtime error			test not run			test not run		
	LoadExt_file.txt	did not complete			842	54	94	842	54	94	842	54	94
totals	avjmps_integration.txt	21771	227	97									
	Environment_init.txt				30	0	100	30	0	100	30	0	100
	Environment_main.txt				74	0	100	74	0	100	74	0	100
	Environment_file.txt				98	0	100	98	0	100	98	0	100
totals	avjmps_integration.txt				22815	304	99						
FSPR	ODUSequence_init.txt							2	0	100	2	0	100
	ODUSequence_main.txt												
	ODUSequence_file.txt												
TJM	ATHS_init.txt												
	ATHS_init.txt												
	ATHS_init.txt												
totals	avjmps_integration.txt							22817	304	99	22817	304	99

Goals, Risks, & Action Items

Goals Status : See Goals spreadsheet

Risks Status : See Risks spreadsheet

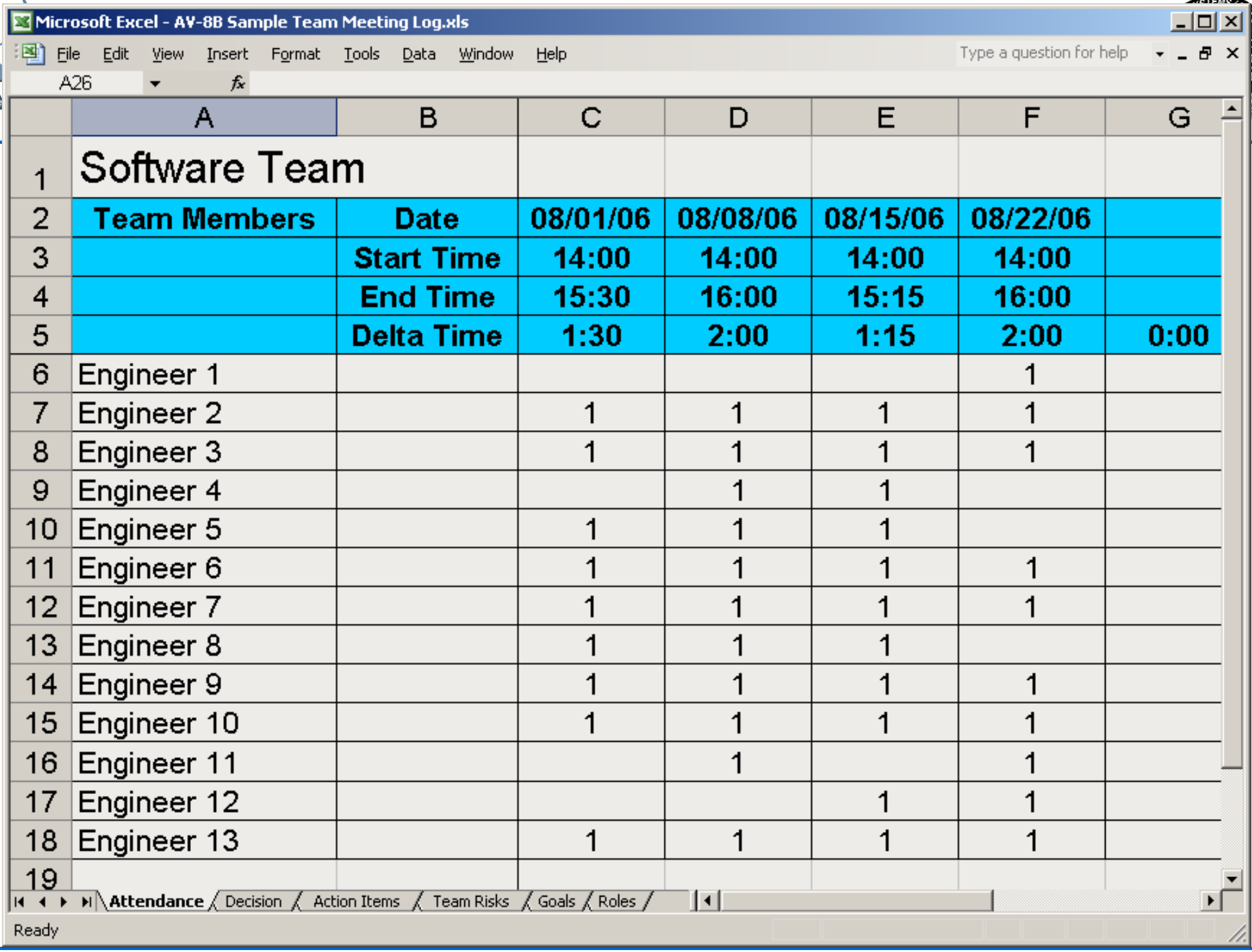
Action Items Status : See Action Item spreadsheet

Meeting Wrap-up (5 min)

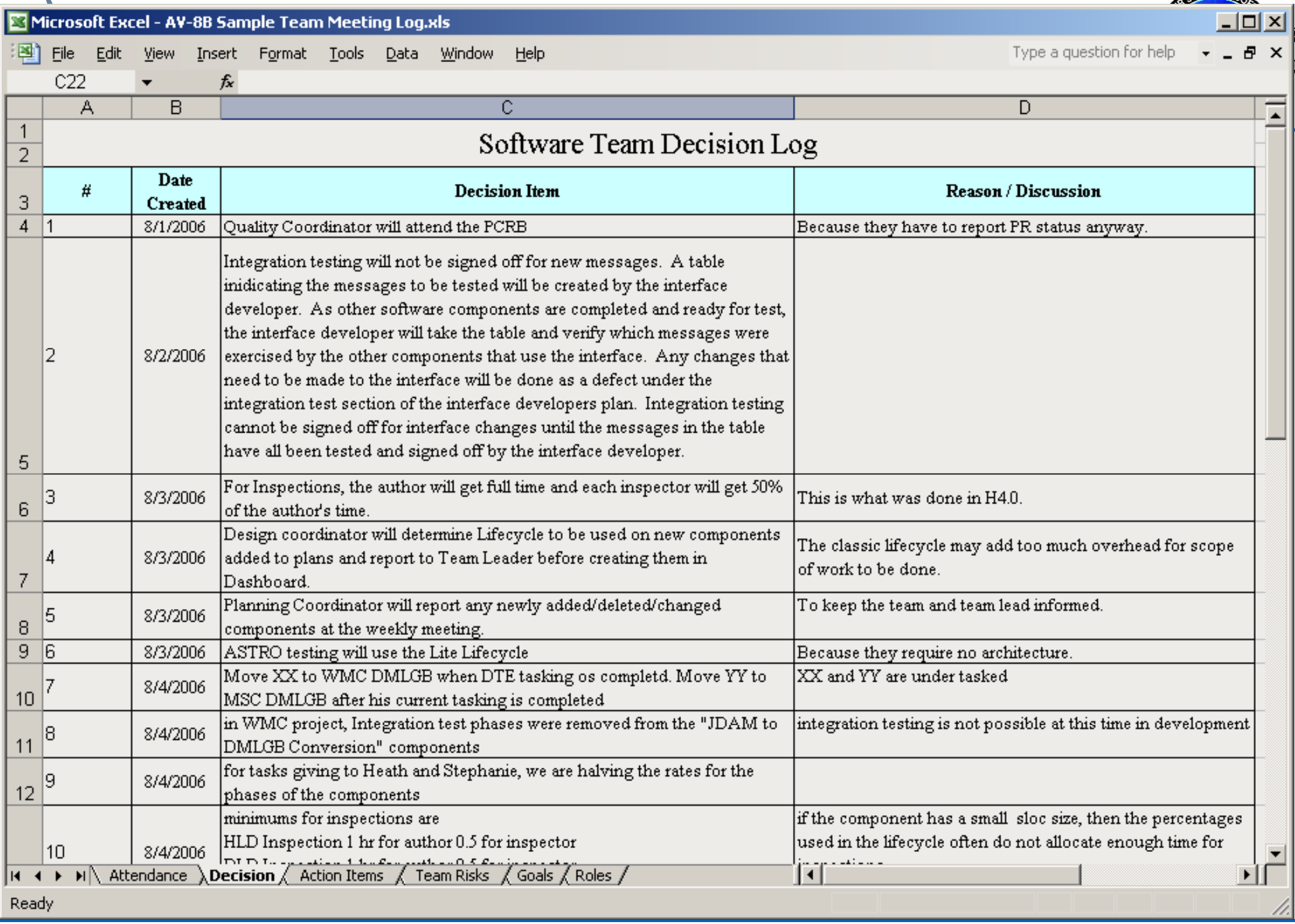
- Read new Action Items
- Risk and Goal reminders for next meeting

Meeting Process Evolution

- Documenting the Meetings
  - **Past**: **used weekly meeting form**
  - **Problems**:
    - meeting data spread across files
    - additional effort to collect and track Action Items
  - **Present**: **uses custom meeting log spreadsheet**
    - tracks meeting attendance, decisions, action items, risks, and goals
    - “one stop shopping” with all the data together

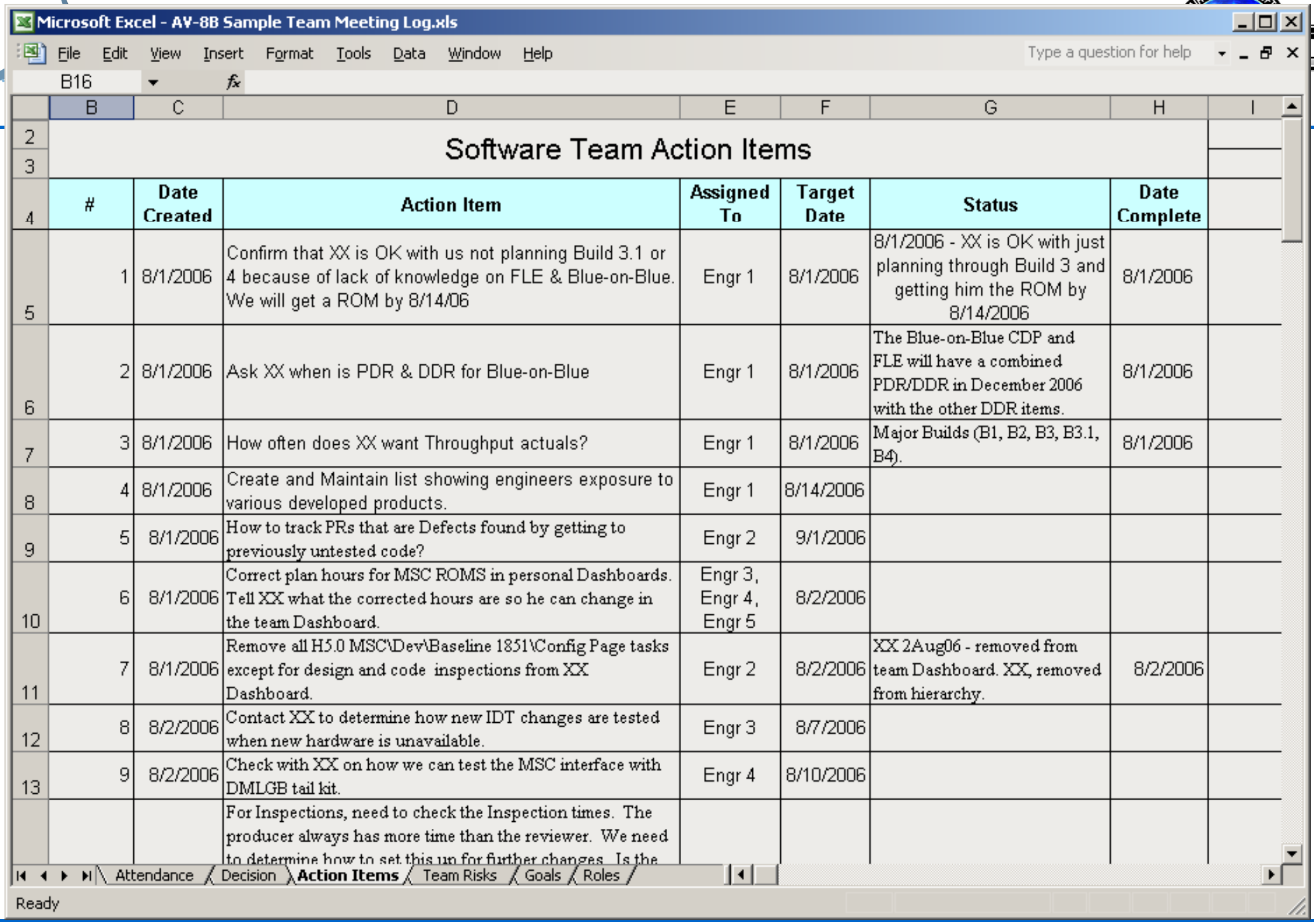


	A	B	C	D	E	F	G
1	Software Team						
2	Team Members	Date	08/01/06	08/08/06	08/15/06	08/22/06	
3		Start Time	14:00	14:00	14:00	14:00	
4		End Time	15:30	16:00	15:15	16:00	
5		Delta Time	1:30	2:00	1:15	2:00	0:00
6	Engineer 1					1	
7	Engineer 2		1	1	1	1	
8	Engineer 3		1	1	1	1	
9	Engineer 4			1	1		
10	Engineer 5		1	1	1		
11	Engineer 6		1	1	1	1	
12	Engineer 7		1	1	1	1	
13	Engineer 8		1	1	1		
14	Engineer 9		1	1	1	1	
15	Engineer 10		1	1	1	1	
16	Engineer 11			1		1	
17	Engineer 12				1	1	
18	Engineer 13		1	1	1	1	
19							



Software Team Decision Log

#	Date Created	Decision Item	Reason / Discussion
1	8/1/2006	Quality Coordinator will attend the PCRB	Because they have to report PR status anyway.
2	8/2/2006	Integration testing will not be signed off for new messages. A table inidicating the messages to be tested will be created by the interface developer. As other software components are completed and ready for test, the interface developer will take the table and verify which messages were exercised by the other components that use the interface. Any changes that need to be made to the interface will be done as a defect under the integration test section of the interface developers plan. Integration testing cannot be signed off for interface changes until the messages in the table have all been tested and signed off by the interface developer.	
3	8/3/2006	For Inspections, the author will get full time and each inspector will get 50% of the author's time.	This is what was done in H4.0.
4	8/3/2006	Design coordinator will determine Lifecycle to be used on new components added to plans and report to Team Leader before creating them in Dashboard.	The classic lifecycle may add too much overhead for scope of work to be done.
5	8/3/2006	Planning Coordinator will report any newly added/deleted/changed components at the weekly meeting.	To keep the team and team lead informed.
6	8/3/2006	ASTRO testing will use the Lite Lifecycle	Because they require no architecture.
7	8/4/2006	Move XX to WMC DMLGB when DTE tasking os completd. Move YY to MSC DMLGB after his current tasking is completed	XX and YY are under tasked
8	8/4/2006	in WMC project, Integration test phases were removed from the "JDAM to DMLGB Conversion" components	integration testing is not possible at this time in development
9	8/4/2006	for tasks giving to Heath and Stephanie, we are halving the rates for the phases of the components	
10	8/4/2006	minimums for inspections are HLD Inspection 1 hr for author 0.5 for inspector	if the component has a small sloc size, then the percentages used in the lifecycle often do not allocate enough time for



Software Team Action Items

#	Date Created	Action Item	Assigned To	Target Date	Status	Date Complete
1	8/1/2006	Confirm that XX is OK with us not planning Build 3.1 or 4 because of lack of knowledge on FLE & Blue-on-Blue. We will get a ROM by 8/14/06	Engr 1	8/1/2006	8/1/2006 - XX is OK with just planning through Build 3 and getting him the ROM by 8/14/2006	8/1/2006
2	8/1/2006	Ask XX when is PDR & DDR for Blue-on-Blue	Engr 1	8/1/2006	The Blue-on-Blue CDP and FLE will have a combined PDR/DDR in December 2006 with the other DDR items.	8/1/2006
3	8/1/2006	How often does XX want Throughput actuals?	Engr 1	8/1/2006	Major Builds (B1, B2, B3, B3.1, B4).	8/1/2006
4	8/1/2006	Create and Maintain list showing engineers exposure to various developed products.	Engr 1	8/14/2006		
5	8/1/2006	How to track PRs that are Defects found by getting to previously untested code?	Engr 2	9/1/2006		
6	8/1/2006	Correct plan hours for MSC ROMS in personal Dashboards. Tell XX what the corrected hours are so he can change in the team Dashboard.	Engr 3, Engr 4, Engr 5	8/2/2006		
7	8/1/2006	Remove all H5.0 MSC\Dev\Baseline 1851\Config Page tasks except for design and code inspections from XX Dashboard.	Engr 2	8/2/2006	XX 2Aug06 - removed from team Dashboard. XX, removed from hierarchy.	8/2/2006
8	8/2/2006	Contact XX to determine how new IDT changes are tested when new hardware is unavailable.	Engr 3	8/7/2006		
9	8/2/2006	Check with XX on how we can test the MSC interface with DMLGB tail kit.	Engr 4	8/10/2006		
		For Inspections, need to check the Inspection times. The producer always has more time than the reviewer. We need to determine how to set this up for further changes. Is the				

Meeting Process Evolution

Microsoft Excel - AV-8B Sample Team Meeting Log.xls

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	A	B	C	D	E	F	G	
1	**Likely**	**Impact**	**Area**	**Risk**	**Mitigation Plan**	**Who**	**Action Date**	**Notes**
2	H	M	S	Availability of working LAR model/Tailkit in Lab will impact development schedule	Put JDAM LAR from MSC into PCHost for testing.	Engr 1		
3	H	M	S	XX leaving will impact FLE development due to availability of YY	Adjust schedules to move FLE development to the beginning	Engr 2		
4	H	L	S	Requirements changed during development invalidates initial estimations	Will Report changes involving requirements volatility to block lead.	Engr 3		
13	L	H	S	AV8B will be forced to upgrade the SW Engineering Environment to the Latest FAM list (I.e. Developer Studio .Net, Rose, and PVCS) and will cause incompatibility issues which will slow or delay new development	Communicate with CRG, FAMs, and other interested parties.	Engr 4		
14	L	M	S	Loss of sw personnel will reduce resources performing new development	Make management aware of resource constraints.	Engr 5		
17								
18			T	None because we are the Software Team of Excellence				
19								
20								

DEFINITIONS

Area	S - Schedule T - Technical
Impact	**for Schedule Risks** **for Technical Risks** H - High: **4 team-week delay** or **Unable to implement 50% of reqts** M - Medium: **2 team-week delay** or **Unable to implement 25% of reqts** L - Low: **1 team-week delay** or **Unable to implemen**
Likelihood	I - Is being realized now - 100% H - High chance of being realized later - 66% - 99% M - Medium chance of being realized later - 33% - 66% L - Low chance of being realized later - 1% - 33%

Attendance | Decision | Action Items | **Team Risks** | Goals | Roles

Ready

Meeting Process Evolution

Microsoft Excel - AV-8B Sample Team Meeting Log.xls

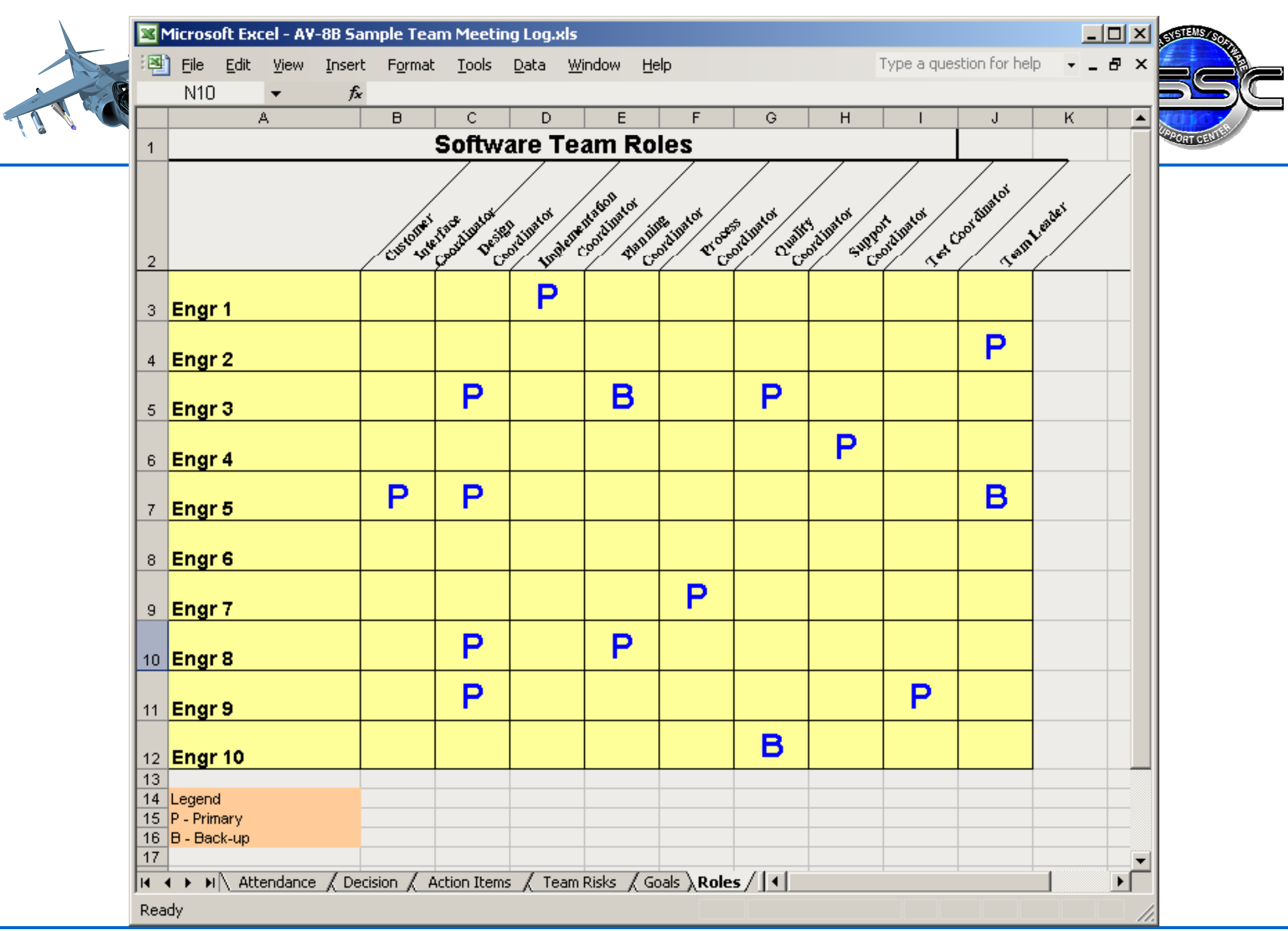
File Edit View Insert Format Tools Data Window Help

B77

	A	B	C	D	E	F
1			Measures		Tracking	
2	Stakeholders	Goal	Goal	Actual	Who	When
46	Team Goals					
47		Quality: For new dev, have reasonable defect density in ST phase (not including defects injected by having inadequate reqts)	MSC & WMC: 2.5 PRs in ST phase per KLOC N&C code DTE: 2.5 PRs in AT phase per KLOC N&C code UPC: 2.5 PRs in ST phase per KLOC N&C		Engr 1	Weekly
48		Quality: For new dev, have 90% Yield before Unit Test Phase (not including defects injected by having inadequate reqts)	90% Process Yield before Unit Test		Engr 1	Weekly
49		Schedule: Stay close to the planned schedule	Actual progress is no more than 2 weeks behind schedule		Engr 2	Weekly
50		Technical: Improve exposure of Software Engineers to various products supported by software team.	Create and Maintain list showing engineers exposure to various developed products. Have at least 2 deep in all product areas.		Engr 3	Every 2 Months (8/14/06)
51						
52						
53						
54						
55						
56						

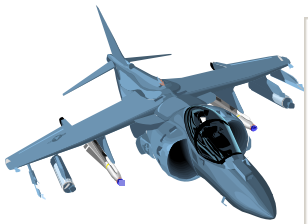
Attendance | Decision | Action Items | Team Risks | Goals | Roles

Ready


Microsoft Excel - AV-8B Sample Team Meeting Log.xls
File Edit View Insert Format Tools Data Window Help
Type a question for help
N10
Software Team Roles
Customer Interface Coordinator
Design Coordinator
Implementation Coordinator
Planning Coordinator
Process Coordinator
Quality Coordinator
Support Coordinator
Test Coordinator
Team Leader
Engr 1 P
Engr 2 P
Engr 3 P B P
Engr 4 P
Engr 5 P P B
Engr 6
Engr 7 P
Engr 8 P P
Engr 9 P P
Engr 10 B
Legend
P - Primary
B - Back-up
Attendance Decision Action Items Team Risks Goals Roles
Ready

Manager Roles

- **Past**: **spotty execution of roles (at best)**
- **Problems**:
  - roles were perceived as a distraction from “real work”
  - planning manager performed out of necessity
- **Present**: **use of coordinator scripts**
  - use coordinators (instead of managers) to remind them they are coordinating efforts to address issues
  - scripts are defined to assist execution
  - scripts remind how to perform the steps
  - role reports are part of the meeting agenda



Sample Quality Coordinator Checklist - AV-8B.doc - Microsoft Word

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HOW TO PERFORM ACTIVITIES

Defect Log

- Is every defect injected in a earlier phase than where it is removed?
- Does each defect have a fix time?
- Is there a clear description of ***the cause*** for each defect?
  - Team Dashboard -> select proper project -> Project Summary (under script button) -> select Dev -> Defect Reports -> View Defect Log -> Export to Excel -> AutoFilter -> filter for defects entered since last week
- Are total defect fix times for a phase consistent with the total time in the phase on the planning summary? Generally, fix time must be < total time in phase, and for testing, fix time + time to run tests should be roughly equal to total time in phase.
  - Team Dashboard -> Task & Schedule -> Report -> export to Excel -> AutoFilter -> filter for defect removal phases signed off since last week
  - For each phase of each component signed off: Add up fix times for defects removed during that phase and compare sum to actual time spent in that phase.

Reviews and Inspections

- Are defects discovered during inspection recorded in the author's workbook?
- Are review/inspection rates about 200 LOC/hour?
- Do all the engineers have design and code review checklists?
- Are all the engineers using their design and code review checklists?

General

- Is component quality profile indicator being reviewed before integration test? (spider chart)
  - Team Dashboard -> Task & Schedule -> Report -> export to Excel -> AutoFilter -> filter for Unit Tests signed off since last week

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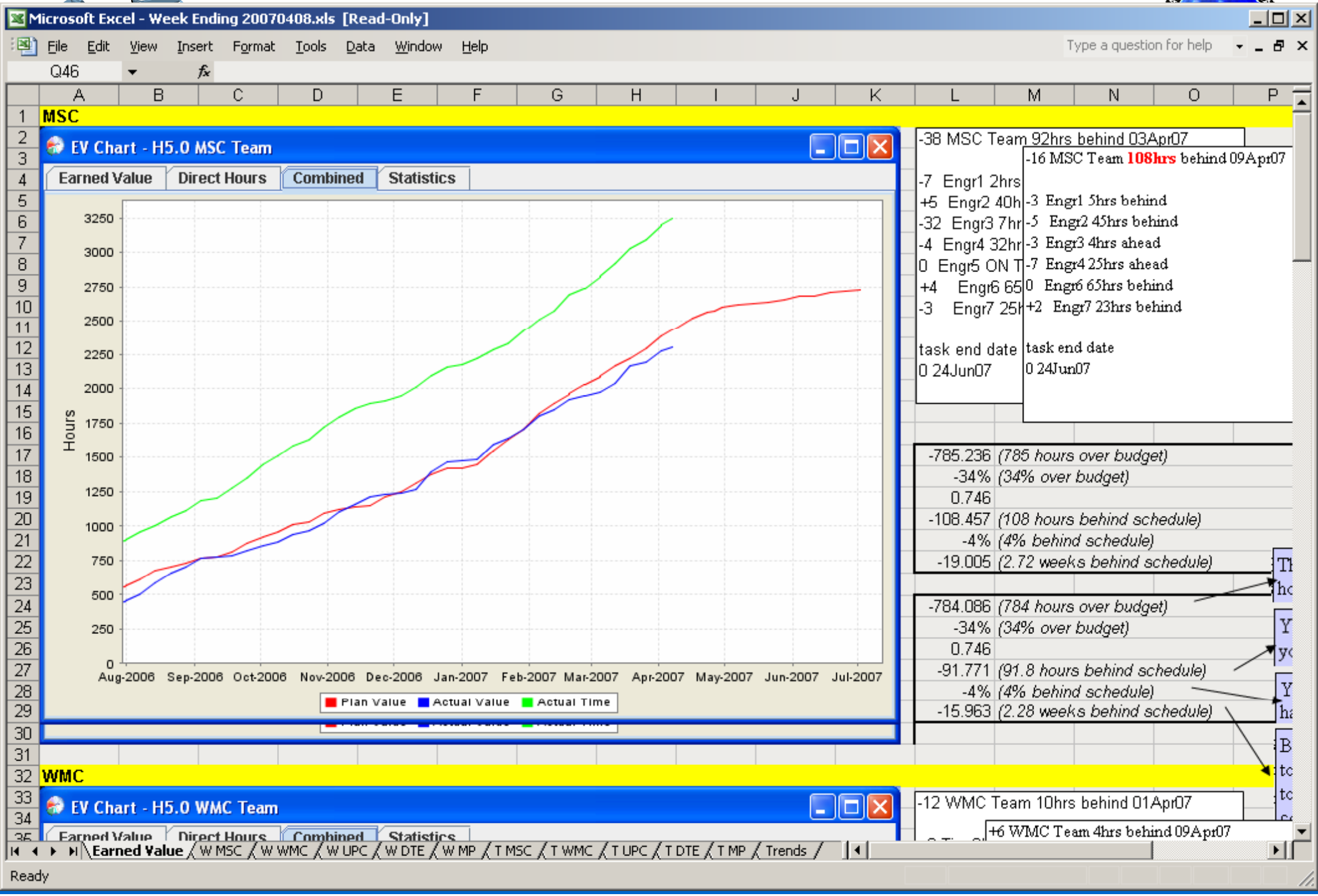
Microsoft Excel - Week Ending 20070408.xls [Read-Only]
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Q46
MSC
EV Chart - H5.0 MSC Team
Earned Value
Direct Hours
Combined
Statistics
Hours
3250
3000
2750
2500
2250
2000
1750
1500
1250
1000
750
500
250
0
Aug-2006 Sep-2006 Oct-2006 Nov-2006 Dec-2006 Jan-2007 Feb-2007 Mar-2007 Apr-2007 May-2007 Jun-2007 Jul-2007
Plan Value
Actual Value
Actual Time
-38 MSC Team 92hrs behind 03Apr07
-7 Engr1 2hrs
+5 Engr2 40h
-32 Engr3 7hr
-4 Engr4 32hr
0 Engr5 ON T
+4 Engr6 65
-3 Engr7 25h
task end date
0 24Jun07
-16 MSC Team 108hrs behind 09Apr07
-3 Engr1 5hrs behind
-5 Engr2 45hrs behind
-3 Engr3 4hrs ahead
-7 Engr4 25hrs ahead
0 Engr6 65hrs behind
+2 Engr7 23hrs behind
task end date
0 24Jun07
-785.236 (785 hours over budget)
-34% (34% over budget)
0.746
-108.457 (108 hours behind schedule)
-4% (4% behind schedule)
-19.005 (2.72 weeks behind schedule)
-784.086 (784 hours over budget)
-34% (34% over budget)
0.746
-91.771 (91.8 hours behind schedule)
-4% (4% behind schedule)
-15.963 (2.28 weeks behind schedule)
WMC
EV Chart - H5.0 WMC Team
-12 WMC Team 10hrs behind 01Apr07
+6 WMC Team 4hrs behind 09Apr07
Earned Value
W MSC
W WMC
W UPC
W DTE
W MP
T MSC
T WMC
T UPC
T DTE
T MP
Trends
Ready

Postmortem Process Evolution

- **Past**: **no analysis or preparation prior to meeting**
- **Problems**:
  - team watching a few figuring out how to analyze data
  - only obvious trends were found
  - focus on time-in-phase % and average productivity rate
- **Present**: **serious preparation for meeting**
  - Lite life-cycle data is evaluated for possible problem type category changes
  - individuals evaluate own data to identify work rates (and report what they find)
  - team learns to use statistical methods

TSP Postmortem Prep Activities for SW.doc - Microsoft Word

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Step	Activities	Description	Who can prep
1	Meeting Roles	Select the meeting roles (specification ROLE). - The launch coach leads the meeting (script MTG). - The timekeeper tracks time and keeps the meeting on schedule. - The recorder notes meeting decisions and actions and writes the meeting report (form MTG).	No prep needed
2	Baseline Evaluation	The support manager leads the team in evaluating - the adequacy of the configuration management process o Did team members work around it? (go ask) o Did anyone have trouble with it (lost changes, waiting for others to check a file back in, etc)? - the adequacy of the system baseline o Did the team have one? o Did everyone know what it consisted of? o How many baselines were established during the period being PMed? - the adequacy of the development environment.	**Support coordinator** get answers to questions
3	Plan Evaluation	The planning manager leads the evaluation of team performance. - compare actual versus plan schedule (i.e., hours per week) - for each product type, compare actual versus plan for o Size of product o Resource (i.e., hours to perform the completed tasks) o Productivity (size measure per hour) o % Time in Phase for each process used	**Planning coordinator** looks at overall team numbers and ensures that all **individual team members** analyze their own numbers
		How many LOE hours were logged? What topics were they spent on (training, launch, etc)?	**Planning coordinator (or delegated)**
4	Quality Performance	The quality manager leads the evaluation of team performance. - quality of the products produced - team performance versus the goals and quality plan - for each product type, complete a PM Quality Factors spreadsheet	**Quality coordinator**
5	Planning Data	Provide updated planning data.	No prep needed, the

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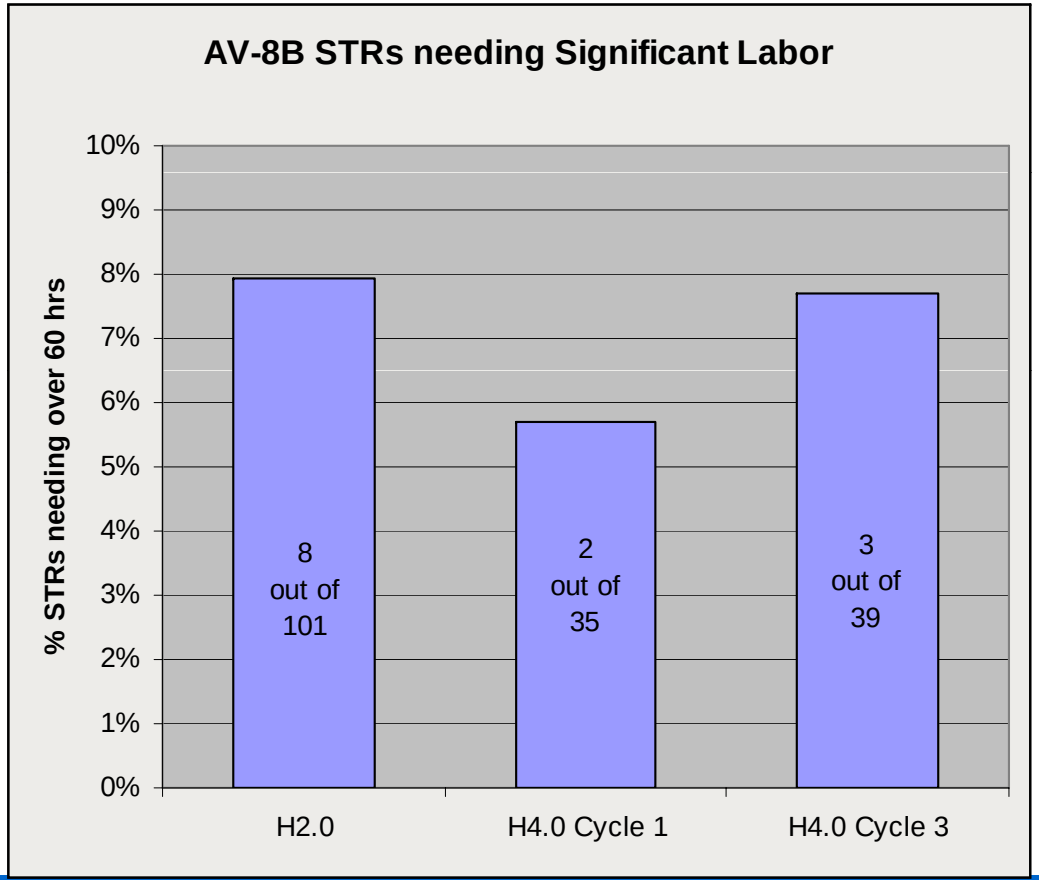
Postmortem Process Evolution

- Example: Rouge STRs
  - Early PMs identified STRs with high actual hours as outliers
  - Later PMs discovered trend across projects of 5-8% rouge STRs
  - Current plans estimate 1 in 10-20 STRs will be rouge (>60 hrs)



Summary

- What AV-8B S/W Team is learning:
  - Launch preparation means smoother launches
  - S/W maintenance needs a difference life-cycle
    - (you don't have to be right the first time with a new process)
  - Meeting preparation means smoother meetings
  - Data analysis leads to process improvement
    - (all team members need to be involved)

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Questions?

Abbreviations

- CMM – Capability Maturity Model (Software)
- CMMI – Capability Maturity Model Integration
- JSSA – Joint Systems/Software Support Activity
- NAVAIR – Naval Air Systems Command
- NSSC – NAVAIR Systems/Software Support Center
- OFP – Operational Flight Program
- PSP – Personal Software Process
- SEI – Software Engineering Institute
- STR – System Trouble Report
- TPI – Team Process Integration
- TSP – Team Software Process